REMARKS

Claims 62 and 63 are new and are supported by claims 3 and 42, respectively. As compared to claims 3 and 42, the scope of moieties R^1, R^2, R^3 and R^4 of formula (27) are limited to, independently, hydrogen or hydrocarbyl. That limitation is supported, for example, at page 34 of the specification.

Claims 3-8, 10, 12-40, 42-47, 49 and 51-63 are pending in the application.

Rejection Under 35 U.S.C. §103(a)

Pending claims 3-8, 10, 12-40, 42-47, 49 and 51-58 stand rejected under 35 U.S.C. §103(a) based on the combined teachings of U.S. Patent No. 6,607,666 (**Hasebe** et al.) and U.S. Patent No. 5,750,468 (**Wright** et al.). Pending claims 59-61 stand rejected under 35 U.S.C. §103(a) based on the combined teachings of **Hasebe** and **Wright**, further in view of U.S. Patent No. 5,795,847 (**Nielsen** et al.).

A. Claims 3-8, 10, 12-40, 42-47, 49 and 51-58

In reference to the Office action dated 2 November 2007 and applicants' 20 February 2008 response thereto, applicants again respectfully maintain that the Office failed to meet its initial burden of establishing a *prima facie* case of obviousness with respect to the invention defined in independent claims 3 and 42 as pending on 2 November 2007 and the claims that depended therefrom.

Applicants maintain that **Hasebe** and **Wright**, either individually or in combination, do not teach or suggest the desirability of, and would not have motivated one skilled in the art, to obtain the claimed invention including a cationic surfactant composition comprising a first surfactant selected from a Markush group including the elected etheramine surfactant

of formula (5), and a second surfactant selected from a Markush group including the elected triamine surfactant of formula (27).

Some of the specific etheramine surfactants disclosed by **Wright** fall within formula (5) as defined in the pending claims. **Wright** is silent regarding alkoxylated triamine surfactants of formula (27).

Hasebe is silent regarding etheramine surfactants of formula (5). Applicants again submit that **Hasebe** does not describe or suggest triamine surfactants of formula (27) therefore it would not have been obvious to one skilled in the art to combine **Wright** and **Hasebe** to arrive at the instantly claimed invention.

The Office at page 2 of the Office action dated 2 November 2007 contended that "Hasebe et al discloses glyphosate compositions comprising applicants' alkoxylated triamine compounds of formula (27); i.e., the triamine surfactant is a chelating agent. See abstract, column 15 line 57 - column 16 line 42. The triamine compounds (chelates) are useful for enhancing glyphosate effectiveness (see abstract)."

Applicants respectfully submit that the **Hasebe** abstract contains no teaching or suggestion of the claimed alkoxylated triamine surfactant formula (27). Instead, the abstract refers to "a tertiary amine, a tertiary amine salt and a quaternary amine salt." A tertiary amine is a compound based on ammonia (i.e., NH_3) wherein all three hydrogen atoms are replaced by organic substituents thereby resulting in a compound of the formula $N(R^1)(R^2)(R^3)$. See, for instance, **Hasebe** at column 3:21-5:21. Tertiary amine compounds therefore contain only **one nitrogen atom**. In contrast, a triamine is a molecule containing **3 nitrogen atoms**. The **Hasebe** abstract makes no reference to triamines. Therefore, the **Hasebe** abstract is absolutely devoid

of any teaching or suggestion of the instantly claimed alkoxylated triamine compounds of formula (27).

Regarding the **Hasebe** disclosure at column 15 line 57 - column 16 line 42, Applicants further submit that the Office has not met its burden of establishing that that chelator compound (f) is a surfactant falling within the scope of the pending claims and impermissibly shifted the burden of proof to the applicants by failing to offer any evidence in support of that contention. Under the MPEP examination guidelines: "Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known" (quoting MPEP §2144.03A). In the Amendment F and Response to Office Action filed by Applicants on 20 February 2008, Applicants submitted evidence to show that it is common general knowledge possessed by a person of ordinary skill in the art that the **Hasebe** triamine chelating agent compound (f) **could not** also be a surfactant because it does not comprise an oil-soluble hydrophobic group that is required by surfactants in order to reduce interfacial surface tension between two liquids or between a liquid and a solid. Consequently, it is **contrary to common knowledge that the Hasebe chelator could also function as a surfactant** and one skilled in the art would therefore have understood that the **Hasebe** triamine chelating agent is not a surfactant and would therefore have fallen outside the scope cationic surfactant compositions as required by the pending claims. Moreover, even if one skilled in the art would somehow have been led to believe that the triamine chelator of compound (f) could also function as a surfactant, **Hasebe** specifically excludes aminopolycarboxylic acids from the listing of preferred

chelating agents and therefore would teach away from the claimed invention.

It is respectfully submitted that the Office has failed to provide any basis in the teaching of **Hasebe** or the general skill in the art that would have directed or suggested to one skilled in the art to make the selection of a triamine **chelating agent** over all the other innumerable and more preferred chelating agents disclosed in the reference for use as a **surfactant** in aqueous pesticidal compositions in combination with a surfactant other than the certain tertiary amine (i.e., containing only **one** nitrogen), tertiary amine salt or quaternary ammonium salt surfactants disclosed in **Hasebe**, such as the etheramine surfactant compositions disclosed by **Wright**. Nor is there any basis for concluding that the composition of claims 3 and 42 would be predicted from the prior art. From an examination of the cited references, a person of ordinary skill in the art would not have found the claims obvious without use of impermissible hindsight reconstruction using applicants' disclosure as a template.[1] Only by hindsight reconstruction could it be said that one of skill in the art would (i) select **Hasebe's** chelator compound (f) from the extensive list of chelators disclosed by **Hasebe**, (ii) assume, in the face of contrary teaching in the art, that said chelator could also function as a surfactant, (iii) substitute **Hasebe** chelator (f) for claimed surfactant formula (27), and (iv) further combine surfactant formula (27) with surfactant formula (5) described by **Wright** in order to arrive at the instant claims. Thus, without the benefit of hindsight, one would not expect to

[1] According to M.P.E.P. § 2141(III)(C), the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention (citing Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986)).

arrive at the present claims based on the disclosure of the cited references.

The Office asserted at page 3 of the Office action dated 2 November 2007 that "the ordinary artisan would have been motivated to combine multiple ingredients (glyphosate, chelating agent, etheramine) as taught in the references in order to take advantage of the characteristics provided by the surfactants," but applicants note that the Office failed to articulate what those characteristics might be. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination" (See MPEP §2143.01). As recently held by the Supreme Court, in an obviousness inquiry there must be a reason for one skilled in the art to modify and/or combine the elements of the prior art in a particular manner that would yield the claimed invention[2] (*KSR International Co. v. Teleflex Inc.* 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 (2007). Applicants have argued that nothing in the disclosure of **Wright** or **Hasebe** teaches or suggests the claimed combination and

[2] ...a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, *it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.* This is because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known. (Emphasis added.) *KSR*, 82 USPQ2d at 1396.

Often, it will be necessary ... to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate this review, this analysis should be made explicit. *KSR*, 82 USPQ2d at 1396.

the Office action did not articulate a reasonable basis upon which these references would direct the skilled person to arrive at the claimed cationic surfactant composition, the composition comprising the elected etheramine surfactant of formula (5) in combination with a co-surfactant comprising the elected triamine surfactant of formula (27), wherein the co-surfactant functions as a compatibilizer or hydrotope in an aqueous pesticidal composition so as to attain higher pesticide loadings in a stable concentrate while maintaining pesticidal efficacy.

In view of the above, applicants again respectfully submit that the Office has not met its initial burden of establishing a *prima facie* case of obviousness with respect to pending claims 3 and 42, and the groups of claims (i) 4-8, 10 and 12-40 and (ii) 52, 53 and 51-61, respectfully, that depend therefrom, and those claims are non-obvious over the combination of **Wright** and **Hasebe.**

B. Claims 59-61

Further in view of the above, applicants respectfully submit that the Office has not met its initial burden of establishing a *prima facie* case of obviousness with respect to claims 59-61 over the combination of **Wright** and **Hasebe** in view of **Nielsen.**

Claims 59-61 depend directly or indirectly from claim 42 and are directed to certain preferred ratios of etheramine surfactant formula (5) to alkoxylated triamine surfactant (27). As argued above, applicants submit that claim 42 is patentable over the combination of **Hasebe** and **Wright.** Claims 59-51, by virtue of their dependence from claim 42, are likewise patentable over those references.

Further, claims 59-61 are also non-obvious over the combination of **Hasebe**, **Wright** and **Nielsen.** **Nielsen** is directed

to liquid concentrate suspensions of glyphosate and ammonium sulfate. Generic surfactant groups cationic, nonionic, anionic and amphoteric are described at column 10:49-52. That passage describes most surfactants known in the art, covering literally thousands of surfactants. Cationic surfactants are further described at column 11:57-64 with triamine surfactants generally described at column 11:59, but no triamine surfactant examples are provided and no preferred triamine surfactants are disclosed. The disclosure therefore covers all triamine surfactants known in the art. Hence, **Nielsen** does not suggest the triamine surfactants of formula (27) and would not have provided a basis or otherwise motivate one skilled in the art to select the claimed surfactant from the hundreds, if not thousands, of triamine surfactants known in the art. **Nielsen** further fails to describe or suggest the claimed cationic etheramine surfactants of formula (5). One skilled in the art would not have been motivated to select the claimed triamine surfactant from among the thousands of possible surfactants described by **Nielsen**, much less make that selection and form the combination with surfactant (5) with any expectation of success. There is simply no basis for concluding that the composition of claim 42 would be predicted from cited references. In view of the combined teaching of those references, there would be no reason for one skilled in the art to modify and/or combine the elements of that prior art in a particular manner that would yield the claimed invention (*KSR*, 82 USPQ2d 1385 (2007)). From an examination of those references, a person of ordinary skill in the art would not have found the instant claims obvious without use of impermissible hindsight reconstruction using applicants' disclosure as a template. Only by hindsight reconstruction could it be said that one of skill in the art

would select surfactant formula (27) from the extensive list of surfactants disclosed by **Nielsen** and further combine it with surfactant formula (5) described by **Wright** at the instantly claimed ratio. Thus, without the benefit of hindsight, one would not expect to arrive at the present claims based on the disclosure of the cited references. Applicants therefore submit that claims 59-61, depending from claim 42, are patentable over the cited references.

C. New Claims 62 and 63

Without conceding the propriety of the obviousness rejections of claims 3-8, 10, 12-40, 42-47, 49 and 51-61 over **Hasebe** and **Wright**, and **Hasebe** and **Wright** in view of **Nielsen**, applicants have submitted new claims 62 and 63 wherein substituted hydrocarbyl groups are excluded from the scope of moieties R^1, R^2, R^3 and R^4 of formula (27) thereby distinguishing the chelator compound of **Hasebe**. In particular, moieties R^1, R^2, R^3 and R^4 are now independently limited to hydrogen and hydrocarbyl. It is known to those skilled in the art that hydrocarbyl (i.e., hydrocarbon) compounds consist exclusively of carbon and hydrogen[3], therefore moieties R^1, R^2, R^3 and R^4 cannot contain oxygen and cannot be carboxyl (i.e., -C(O)OH). Consequently, **Hasebe** chelator compound (f), containing five carboxyl groups, is not an alkoxylated triamine surfactant of formula (27) as set forth in claims 62 and 63.

Nothing in the disclosure of **Wright** or **Hasebe** teaches or suggests alkoxylated triamine surfactants of formula (27) as recited in new claims 62 and 63 and the claimed combination of formulae (5) and (27) in a pesticidal composition is therefore

[3] See, for instance, page 46 of the specification; Hawley, *The Condensed Chemical Dictionary*, 10th Ed., 1981, at page 541; and Webster's New Collegiate Dictionary, 1979, at page 555 (attached).

non-obvious over the cited references. It is respectfully submitted therefore that claims 62 and 63 are in condition for allowance.

Conclusion

Favorable reconsideration and allowance of all pending claims are respectfully requested.

Applicants request an extension of time to and including 30 September 2008, for filing a response to the above-mentioned Office action and for submission of the concurrently filed Request for Continued Examination. The Commissioner is hereby authorized to charge this fee, as well as any additional fees which may be required, to Deposit Account No. 191345.

The Examiner is invited to contact the undersigned attorney should any issues remain unresolved.

Respectfully submitted,

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JDH/VMK/mrt
*Attachment

The Condensed Chemical Dictionary

TENTH EDITION

Revised by

GESSNER G. HAWLEY

VNR VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI ATLANTA DALLAS SAN FRANCISCO
LONDON TORONTO MELBOURNE

hydroboration. The reaction of diboranes with alkenes (olefins) to form trialkylboron compounds, used in organic synthesis. Prostaglandins have been synthesized by this method.

hydrobromic acid. Hydrogen bromide in aqueous solution. See also hydrogen bromide.

Properties: Colorless or faintly yellow liquid consisting of an aqueous solution of hydrogen bromide, which is a gas at room temperature. Soluble in water and alcohol. A constant-boiling solution is formed, of sp. gr. 1.49, containing 48% hydrogen bromide; its b.p. at 700 mm is 122°C. Saturated solution contains 68.8% HBr at 0°C. Hydrobromic acid is a strong acid and sensitive to light. Noncombustible.

Derivation: By dissolving HBr in water, or by distilling from a mixture of sodium bromide and 50% sulfuric acid.

Grades: Technical 40%; medicinal 48%; 62%.

Containers: Glass bottles; carboys.

Hazard: Strong irritant to eyes and skin. Toxic.

Uses: Analytical chemistry; solvent for ore minerals; manufacture of inorganic and some alkyl bromides; alkylation catalyst.

Shipping regulations: (Anhydrous) (Rail, Air) Nonflammable Gas label. Not acceptable passenger. (Over 49%) (Rail) Corrosive label. Not acceptable passenger. (Air) Not acceptable. (Less than 49%) (Rail, Air) Corrosive label.

hydrocarbon. An organic compound consisting exclusively of the elements carbon and hydrogen. Derived principally from petroleum, coal tar, and plant sources. Following is a resume of the principal types.

I. Aliphatic (straight-chain)
   (1) Paraffins (alkanes): generic formula C_nH_{2n+2}. Saturated, single bonds only.
   (2) Olefins: generic formula C_nH_{2n}.
      (a) alkenes: unsaturated (one double bond)
      (b) alkadienes: unsaturated (two double bonds) (butadiene)
   (3) Acetylenes: generic formula C_nH_{2n-2}. Unsaturated (triple bond).
   (4) Acyclic terpenes. Unsaturated. (Polymers of isoprene, C_5H_8).

Note: Some aliphatic compounds have branched chains in which the subchain also contains carbon atoms (isobutane); both chains are essentially straight.

II. Cyclic (closed ring).
   (1) Alicyclic: three or more carbon atoms in a ring structure, with properties similar to those of aliphatics.
      (a) Cycloparaffins (naphthenes): saturated compounds often having a boat or chair structure, e.g., cyclohexane, cyclopentane.
      (b) Cycloolefins: unsaturated, two or more double bonds, e.g., cyclopentadiene (2),
      (c) Cycloacetylenes (cyclynes): unsaturated (triple bond).
   (2) Aromatic: unsaturated; hexagonal ring structure (three double bonds); single rings and double or triple fused rings.
      (a) benzene group (1 ring)
      (b) naphthalene group (2 rings)
      (c) anthracene group (3 rings)
   (3) Cyclic terpenes: monocyclic (dipentene) dicyclic (pinene).

Note: Olefinic (isoprenoid) hydrocarbons are produced by a number of plants, Notably *Hevea brazilienis* (rubber), guayule, and various members of the Euphorbiaceae family. Current research on the latter group indicates that they could be used as a source of liquid fuels and chemical feedstocks by genetic modification of the plants and control of their molecular constitution. It is estimated that oil obtained by large-scale cultivation of such plants, which grow well in semi-arid environments, could become economically competitive with petroleum within a few years. See also guayule; biomass; copaiba.

hydrocarbon, halogenated. A hydrocarbon in which one or more of the hydrogen atoms has been replaced by fluorine, chlorine, bromine, or iodine. Examples: carbon tetrachloride, chlorobenzene, chloroform, trifluoromethane. This greatly increases the anesthetic and narcotic action of aliphatic hydrocarbons. Many halogenated hydrocarbons are highly toxic; some may detonate on contact with barium. A number of the chlorinated types are used as insecticides. See also fluorocarbon; chlorofluorocarbon.

hydrocellulose. See cellulose, hydrated.

hydrochloric acid 26th highest-volume chemical produced in U.S. (1979). Hydrogen chloride in aqueous solution. See also hydrogen chloride.

Properties: Colorless or slightly yellow, fuming, pungent liquid; flash point, none. A constant-boiling acid containing 20% hydrogen chloride is formed. Hydrochloric acid is a strong, highly corrosive acid. The commercial "concentrated" or fuming acid contains 38% hydrogen chloride and has a sp. gr. 1.19. Soluble in water, alcohol and benzene. Noncombustible.

Derivation: Dissolving hydrogen chloride in water at various concentrations.

Grades: U.S.P. (35–38%); N.F. diluted (10%); technical (usually 18, 20, 22, 23° Bé, corresponding to approx. 28, 31, 35, 37% HCl); F.C.C.

Containers: Glass bottles; carboys; rubber-lined steel drums; rubber-lined tank cars.

Hazard: Highly toxic by ingestion and inhalation; strong irritant to eyes and skin.

Uses: Acidizing (activation) of petroleum wells; boiler scale removal; chemical intermediate; ore reduction; food processing (corn syrup, sodium glutamate);

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roses and grown esp. for their strongly recurrent hloom of large usu. scentless flowers

hybrid vigor *n* : HETEROSIS

hy·bris \'hī-brəs, 'hē-\ *var af* HUBRIS

hyd *abbr* **1** hydraulics **2** hydrostatics

hy·da·thode \'hīd-ə-,thōd\ *n* [ISV, fr. Gk *hydat-, hydōr* water + *hodos* road — more at CEDE] : an epidermal structure in higher plants functioniog in the exudation of water

hy·da·tid \'hīd-ə-təd, -,tid\ *n* [Gk *hydatid-, hydatis* watery cyst, fr. *hydat-, hydōr*] : a larval tapeworm occurring as a fluid-filled sac contaioiog daughter cysts and scolices or forming a proliferatiog spongy mass that actively invades and metastasizes io the host's tissues

hydr- *ar* **hydro-** *comb farm* [ME *ydr-, ydro-*, fr. OF, fr. L *hydr-, hydro-*, fr. Gk, fr. *hydōr* — more at WATER] **1 a** : water ⟨*hydr*ous⟩ ⟨*hydro*electricity⟩ **b** : liquid ⟨*hydro*kinetics⟩ **2** : hydrogen : cootaining or combioed with hydrogen ⟨*hydro*carboo⟩ ⟨*hyd*roxyl⟩ **3** : hydroid ⟨*hydro*medusa⟩

Hy·dra \'hī-drə\ *n* [ME *Ydra*, fr. L *Hydra*, fr. Gk] **1** : a many-headed serpent or monster of Greek mythology slain hy Hercules each head of which when cut off was replaced hy two others **2** *not cap* : a multifarious evil not to be overcome hy a siogle effort **3** [L (gen. *Hydrae*), fr. Gk] : a southern constellation of great length that lies south of Cancer, Sextans, Corvus, and Virgo and is represented oo old maps hy a serpent **4** *nat cap* [NL, genus oame, fr. L, Hydra] : any of oumerous small tubular freshwater hydrozoan polyps (as of the genus *Hydra*) having at one end a mouth surrounded hy tentacles

hydra 4

hy·dra–head·ed \,hī-drə-'hed-əd\ *adj* : having many centers or hranches ⟨a ~ organization⟩

hy·dral·azine \hī-'dral-ə-,zēn\ *n* [*hydr-* + phth*al*ic (acid) + *azine*] : a crystalline base $C_8H_8N_4$ used in the treatment of hypertension

hy·dren·gea \hī-'drān-jə\ *n* [NL, genus name, fr. *hydr-* + Gk *angeion* vessel — more at ANGI-] : any of a genus (*Hydrangea*) of shrubs and ooe woody vine of the saxifrage family with opposite leaves and showy corymbose clusters of usu. sterile white or tinted flowers

hy·drant \'hī-drənt\ *n* **1** : a discharge pipe with a valve and spout at which water may be drawn from a water maio (as for fightiog fires) — called also *fireplug* **2** : FAUCET

hy·dranth \'hī-,dran(t)th\ *n* [ISV *hydr-* + Gk *anthos* flower — more at ANTHOLOGY] : one of the nutritive zooids of a hydroid colony

hy·drase \'hī-,drās, -,drāz\ *n* : an enzyme that promotes the addition or removal of water to or from its substrate

hy·dras·tine \hī-'dras-,tēn, -tən\ *n* : a bitter crystalline alkaloid $C_{21}H_{21}NO_6$ that is an active coostituent of hydrastis

hy·dras·tis \-təs\ *n* [NL, genus oame] : the dried rhizome and roots of a goldenseal (*Hydrastis canadensis*) formerly used as a bitter tonic, hemostatic, and antiseptic

[1]**hy·drate** \'hī-,drāt\ *n* **1** : a compound or complex ion formed hy the unioo of water with some other suhstance **2** : HYDROXIDE ⟨calcium ~⟩

[2]**hydrate** *vb* **hy·drat·ed; hy·drat·ing** *vt* : to cause to take up or comhioe with water or the elements of water ~ *vi* : to become a hydrate — **hy·dra·tion** \hī-'drā-shən\ *n* — **hy·dra·tor** \'hī-,drāt-ər\ *n*

hy·drau·lic \hī-'drȯ-lik\ *adj* [L *hydraulicus*, fr. Gk *hydraulikos*, fr. *hydraulis* hydraulic organ, fr. *hydr-* + *aulos* reed iostrument — more at ALVEOLUS] **1** : operated, moved, or effected hy means of water **2 a** : of or relating to hydraulics ⟨~ engineer⟩ **b** : of or relating to water or other liquid in motioo ⟨~ erosion⟩ **3** : operated hy the resistance offered or the pressure transmitted when a quantity of liquid (as water or oil) is forced through a comparatively small orifice or through a tube ⟨~ hrakes⟩ **4** : hardening or setting under water ⟨~ cement⟩ — **hy·drau·li·cal·ly** \-li-k(ə-)lē\ *adv*

hydraulic ram *n* : a pump that forces running water to a higher level hy utilizing the kinetic energy of flow

hy·drau·lics \hī-'drȯ-liks\ *n pl but sing in constr* : a hranch of science that deals with practical applications (as the transmission of energy or the effects of flow) of liquid (as water) in motion

hy·dra·zide \'hī-drə-,zīd\ *n* : any of a class of compounds resulting from the replacement hy an acid radical of hydrogen io hydrazine or in ooe of its derivatives

hy·dra·zine \'hī-drə-,zēn\ *n* [ISV] : a colorless fumiog corrosive stroogly reduciog liquid base N_2H_4 used esp. io fuels for rocket and jet engines; *also* : an organic base derived from this compound

hy·dra·zo·ic acid \,hī-drə-,zō-ik-\ *n* [*hydr-* + *azo-* + *-ic*] : a colorless volatile poisonous explosive liquid HN_3 that has a foul odor and yields explosive salts of heavy metals

hy·dric \'hī-drik\ *adj* : characterized hy, relating to, or requiring an abundance of moisture ⟨a ~ habitat⟩ ⟨a ~ plant⟩ — compare MESIC, XERIC — **hy·dri·cal·ly** \-dri-k(ə-)lē\ *adv*

-hy·dric \'hī-drik\ *adj suffix* **1** : cootaining acid hydrogen ⟨mono*hydric*⟩ **2** : contaioiog hydroxyl ⟨hexa*hydric* alcohols⟩

hy·dride \'hī-,drīd\ *n* : a compound of hydrogen usu. with a more electropositive element or radical

hy·dri·od·ic acid \,hī-drē-,äd-ik-\ *n* [ISV] : an aqueous solutioo of hydrogen iodide HI that is a strong acid resemhliog hydrochloric acid chemically and that is also a strong reducing agent

[1]**hy·dro** \'hī-(,)drō\ *n, pl* **hydros** [short for *hydropathic establishment*] **1** *Brit* : a hotel that caters to people takiog a water cure **2** *Brit* : an estahlishment that furnishes water cures : SPA

[2]**hydro** *adj* : HYDROELECTRIC ⟨~ energy⟩

hy·dro·bi·ol·o·gy \,hī-drō-bī-'äl-ə-jē\ *n* : the hiology of bodies or units of water; *esp* : LIMNOLOGY — **hy·dro·bi·o·log·i·cal** \-,hī-ə-'läj-i-kəl\ *adj* — **hy·dro·bi·ol·o·gist** \-bī-'äl-ə-jəst\ *n*

hy·dro·bro·mic acid \,hī-drə-,hrō-mik-\ *n* [ISV] : an aqueous solution of hydrogen hromide HBr that is a strong acid resemhling hydrochloric acid chemically, that is a weak reducing agent, and that is used esp. for making hromides

hy·dro·car·bon \,hī-drə-'kär-bən\ *n* : an organic compound (as acetylene or benzene) cootaining only carbon and hydrogen and often occurring in petroleum, natural gas, coal, and bitumens — **hy·dro·car·bo·na·ceous** \-,kär-bə-'nā-shəs\ *ar* **hy·dro·car·bon·ic** \-kär-'bän-ik\ *ar* **hy·dro·car·bon·ous** \-'kär-bə-nəs\ *adj*

hy·dro·cele \'hī-drə-,sēl\ *n* [L, fr. Gk *hydrokēlē*, fr. *hydr-* + *kēlē* tumor — more at -CELE] : an accumulatioo of serous fluid in a sacculated cavity (as the serotum)

hy·dro·ce·phal·ic \,hī-drō-sə-'fal-ik\ *adj* : relating to, characterized hy, or affected with hydrocephalus — **hydrocephalic** *n*

hy·dro·ceph·a·lus \-'sef-ə-ləs\ *also* **hy·dro·ceph·a·ly** \-lē\ *n* [NL *hydrocephalus*, fr. LL, hydrocephalic, adj., fr. Gk *hydrokephalos*, fr. *hydr-* + *kephalē* head — more at CEPHALIC] : an ahoormal iocrease io the amount of cerehrospioal fluid withio the cranial cavity that is accompanied hy expansion of the cerehral ventricles, enlargement of the skull and esp. the forehead, and atrophy of the hrain

hy·dro·chlo·ric acid \,hī-drə-,klōr-ik-, -,klȯr-\ *n* [ISV] : an aqueous solution of hydrogen chloride HCl that is a stroog corrosive irritatiog acid, is oormally present in dilute form in gastric juice, and is widely used in industry and in the laboratory

hy·dro·chlo·ride \-'klō(ə)r-,īd, -'klȯ(ə)r-\ *n* : a compound of hydrochloric acid esp. with an organic base (as an alkaloid)

hy·dro·chlo·ro·thi·a·zide \-,klōr-ə-'thī-ə-,zīd, -,klȯr-\ *n* [*hydr-* + *chlar-* + *thia*zine + *-ide*] : a diuretic and hypotensive drug $C_7H_8O_4N_3ClS_2$

hy·dro·col·loid \,hī-drə-'käl-,ȯid\ *n* : a substance that yields a gel with water — **hy·dro·col·loi·dal** \-kə-'lȯid-ᵊl, -kä-\ *adj*

hy·dro·cor·ti·sone \-'kȯrt-ə-,sōn, -,zōn\ *n* : CORTISOL

hy·dro·crack·ing \'hī-drə-,krak-iŋ\ *n* : the crackiog of hydrocarbons io the presence of hydrogen — **hy·dro·crack** \-,krak\ *vt*

hy·dro·cy·an·ic acid \,hī-drō-sī-,an-ik-\ *n* [ISV] : an aqueous solution of hydrogen cyanide HCN that is a poisooous weak acid and is used chiefly io fumigatiog and in organic synthesis

hy·dro·dy·nam·ic \-dī-'nam-ik\ *also* **hy·dro·dy·nam·i·cal** \-i-kəl\ *adj* [NL *hydrodynamicus*, fr. *hydr-* + *dynamicus* dynamic] : of, relating to, or involving principles of hydrodynamics — **hy·dro·dy·nam·i·cal·ly** \-i-k(ə-)lē\ *adv*

hy·dro·dy·nam·ics \-iks\ *n pl but sing in constr* : a hranch of science that deals with the motion of fluids and the forces acting on solid bodies immersed io fluids and io motioo relative to them — compare HYDROSTATICS — **hy·dro·dy·nam·i·cist** \-'nam-ə-səst\ *n*

hy·dro·elec·tric \,hī-drō-i-'lek-trik\ *adj* [ISV] : of or relating to productioo of electricity hy waterpower — **hy·dro·elec·tri·cal·ly** \-tri-k(ə-)lē\ *adv* — **hy·dro·elec·tric·i·ty** \-,lek-'tris-ət-ē, -'tris-tē\ *n*

hy·dro·flu·or·ic acid \,hī-drō-flü-,ȯr-ik, -,är-\ *n* [ISV] : an aqueous solution of hydrogen fluoride HF that is a weak poisonous acid, that resemhles hydrochloric acid chemically hut attacks silica and silicates, and that is used esp. io fioishiog and etching glass

hy·dro·foil \'hī-drə-,fȯil\ *n* **1** : a body similar to an airfoil hut designed for actioo in or oo water **2** : a motorboat that has metal plates or fins attached hy struts fore and aft for liftiog the hull clear of the water as speed is attained

hy·dro·form·ing \-,fȯr-miŋ\ *n* [*hydr-* + *refarming*] : a process for produciog high-octane gasoline from petroleum oaphthas hy catalytic dehydrogenation and aromatizatioo io the presence of hydrogen — **hy·dro·form·er** \-mər\ *n*

hy·dro·gen \'hī-drə-jən\ *n* [F *hydrogène*, fr. *hydr-* + *-gène* -gen; fr. the fact that water is generated hy its comhustioo] : a oonmetallic element that is the simplest and lightest of the elements, is normally a colorless odorless highly flammahle diatomic gas, and is used esp. in synthesis — compare DEUTERIUM, TRITIUM; see ELEMENT tahle — **hy·drog·e·nous** \hī-'dräj-ə-nəs\ *adj*

hy·drog·e·nase \hī-'dräj-ə-,nās, -'nāz\ *n* : an enzyme of various microorganisms that promotes the formation and utilization of gaseous hydrogen

hy·dro·ge·nate \hī-'dräj-ə-,nāt, 'hī-drə-jə-\ *vt* **-nat·ed; -nat·ing** : to combine or treat with or expose to hydrogen; *esp* : to add hydrogen to the molecule of (an unsaturated organic compound) — **hy·dro·ge·na·tion** \hī-,dräj-ə-'nā-shən, ,hī-drə-jə-\ *n*

hydrogen bomb *n* : a bomh whose violent explosive power is due to the sudden release of atomic energy resultiog from the union of light ouclei (as of hydrogen atoms) at very high temperature and pressure to form helium ouclei

hydrogen bond *n* : a linkage consistiog of a hydrogen atom booded between two electronegative atoms (as fluorine, oxygen, or nitrogen) with ooe side of the linkage being a covalent bond and the other beiog electrostatic in nature

hydrogen bromide *n* : a colorless irritating gas HBr that fumes in moist air and yields hydrohromic acid when dissolved in water

hydrogen chloride *n* : a colorless pungent poisonous gas HCl that fumes io moist air and yields hydrochloric acid when dissolved io water

hydrogen cyanide *n* **1** : a poisonous usu. gaseous compound HCN that has the odor of hitter almonds **2** : HYDROCYANIC ACID

hydrogen fluoride *n* : a colorless corrosive fuming usu. gaseous compound HF that yields hydrofluoric acid when dissolved in water

hydrogen iodide *n* : an acrid colorless gas HI that fumes in moist air and yields hydriodic acid when dissolved in water

hydrogen ion *n* **1** : the catioo H^+ of acids consisting of a hydrogen atom whose electron has been transferred to the anion of the acid **2** : HYDRONIUM

hydrogen peroxide *n* : an unstahle compound H_2O_2 used esp. as an oxidiziog and hleaching agent, an antiseptic, and a propellant

ə abut	ᵊ kitten	ər further	a back	ā bake	ä cot, cart	
au̇ out	ch chin	e less	ē easy	g gift	i trip	ī life
j joke	ŋ sing	ō flow	ȯ flaw	ȯi coin	th thin	t͟h this
ü loot	u̇ foot	y yet	yü few	yu̇ furious	zh vision	